



# 2019 Air Quality Annual Status Report (ASR) (for 2018 monitoring year)

In fulfilment of Part IV of the  
Environment Act 1995  
Local Air Quality Management

August 2019

## Swindon Borough Council

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## Executive Summary: Air Quality in Our Area

### Air Quality in the Borough Of Swindon

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas<sup>1,2</sup>. The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

Air Quality within the Swindon Borough Council (SBC) area is generally very good and, in the great majority of areas measured; improved through 2018.

In common with many towns and cities however, there are some discrete parts of the town where air quality is less good. These few areas are generally associated with congested traffic routes, and where dwellings lie close to the kerb creating a 'street canyon'. Where a street 'canyon' exists, exhaust gases do not disperse well.

One such area in Swindon is at Kingshill, and here it has been necessary, in May of 2018 to declare an Air Quality Management Area (AQMA) which covers a circa 280m stretch of the road; South East of the junction with Bowood Road to the roundabout with Okus Road. The pollutant of concern here is Nitrogen Dioxide (NO<sub>2</sub>), and the limit value which has been exceeded is the Annual Average limit of 40mcg/m<sup>3</sup>. NO<sub>2</sub> exists in the air as a background pollutant, but here heavy traffic flows emit more, and this has led to the exceedance. The road is oriented away from prevailing winds, and is uphill & closely bounded by trees and houses, so the gas cannot disperse.

Monitoring through 2018 has shown that air quality within the AQMA also generally improved.

One area of the town with measured levels of Nitrogen Dioxide approaching the limit levels is the west end of Manchester Road near the bus station. The area this diffusion tube is located is subject to proposed infrastructure changes which is expected to have a positive effect on the pollution levels. NO<sub>2</sub> at this site remained stubbornly high and

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

just below the limit criteria, at 38.8 mcg/m<sup>3</sup> in 2018 however, and when compared to the general improvement across the town; this represents a worsening picture here. We still await news on the changes to the bus station which we expect to improve this area markedly, and an application for funding has been made to support the construction of a new 'Bus Boulevard'. This will involve the demolition of the existing bus station here. The Wellington Street/Manchester Road junction has also very recently (June 2019) been realigned as part of the 'Front Door' improvement project, and we expect this to help traffic flow off of Manchester Road, and so relieve pressure on the air quality there too.

3 of the 29 tube sites (a single tube of the three at Bath Road car park, a single tube at Kingshill, & Cricklade Road) have experienced a marginal worsening in pollution levels. All other sites have experienced an improvement in Nitrogen Dioxide levels, of up to 21%. The greatest improvement was found at Iffley Road; an area where we had concerns last year. The neighbouring diffusion tube at Cheney Manor Road also showed an improvement of 5.5%, and we put this down to a general improvement in air quality, but also to ongoing traffic management changes around the Bruce Street Bridges complex and the Outlet Centre.

No changes to site locations have been made in the period this report covers.

We have found no new major sources of prescribed pollutants in Swindon. Levels of Nitrogen Dioxide around major roads continue to respond to rising levels of traffic, and/or the constant evolution of the town's road network. Swindon has much major development either planned or in train, and levels of pollution will respond to these changes on a continuing basis. New development is designed to account for what is known of the effects of heavy road traffic, and so we do not expect any new areas of concern to be identified. There will be a continuing and growing pressure in areas already highlighted however, as new development across Swindon inevitably leads to increased traffic in all areas, including those already identified as potential hotspots.

We continue to monitor air quality with regard to Nitrogen Dioxide in Swindon using a wide network of 29 diffusion tubes at 25 locations & a reference standard real time monitor, coupled with traffic flow monitoring hardware. Post period end; we have extended our network of diffusion tubes to 41 in number, at 37 locations. Some of these additional tubes are aimed at understanding the AQMA better, but most are

aimed at other potential hotspots. We will report on results from these in the 2020 Status Report.

Across Swindon; traffic derived Nitrogen Dioxide is the only pollutant of immediate concern, as it is across the UK, and it is not thought that levels of any of the other prescribed pollutants need to be formally considered at this time.

## **Actions to Improve Air Quality**

An Air Quality Action Plan (AQAP) has been produced for Kingshill Road to cover the period 2019 – 2024 and over that period we aim to reduce the amount of NO<sub>2</sub> here to within legal limits. Along with a number of other actions to improve air quality in the town generally; we have committed to investigate removing Heavy Good Vehicles from this road with a Traffic Regulation Order. We have also committed to pursuing the upgrading of the Old Town Railway Cycle Path to remove traffic from this road. We are also committing to greening the Council's fleet of vehicles, and to working with taxi and cab operators and bus companies to do the same.

Nitrogen Dioxide is principally a product of internal combustion engines, or of other burning of fossil fuels. Reducing impacts from this pollutant is currently principally dependant on influencing peoples travel choices and vehicle purchasing decisions. The drivers for this are inevitably national in nature, but Swindon runs a number of projects designed to influence the public in this way:

- Swindon Travel Choices; which seeks to enable people to make more sustainable choices for travel.
- Promoting low emission transport through the construction and/or upgrading of cycle ways, and the inception of Local Development Orders for alternative fuelling schemes in the Borough, such as electric vehicle charging points, or Hydrogen fuelling stations.
- A Cycle to work scheme was available to all Council staff.
- The publication of Transport Vision 2026; which includes a number of vision outcomes to support sustainable transport.

Work to the town's road network continues, and we have seen a marked improvement in air quality at Cheney Manor Road/Iffley Road as a result of better traffic management at the Bruce Street Bridges complex and The Outlet retail centre in 2018.

The Bus Boulevard project continues to be worked up, and funding bids are now being actively pursued to deliver this. This will impact on air quality on Manchester Road through the demolition of the bus station and subsequent easing of traffic through the Manchester Road/Aylesbury Street junction. Air quality in this area remains stubbornly marginal in 2018.

Affecting the same area; major improvements and reprioritisations to the Wellington Street/Manchester Road junction are expected to bring improvements that will show in the 2020 Status Report.

More generally; the Council has pursued a programme of installing solar arrays on land which it owns, and air quality is an important factor in its Planning process for developments across the Borough. Planning consent has been obtained for one of the UK's largest battery storage facilities.

The Local Plan 2026 also seeks to move Swindon to a more sustainable future. Theme 4 considers actions to minimise congestion, journey time, and therefore noise and air quality. Swindon's Planning Policy TR1: *Sustainable Transport Networks*, enshrines these principles and aims for all future development.

## **Conclusions and Priorities**

We have seen air quality improve at almost all sites in 2018, including within the Air Quality Management Area at Kingshill Road. No new hotspots have been identified.

The AQMA remains non-compliant with limit criteria however, and robust pursuit of our Air Quality Action Plan, which was submitted to DEFRA in May 2019 will be needed to bring this under control.

The Borough is subject to constant change and development of its and others' infrastructure, and it is an area of very high current & planned housing growth. Although air quality has been relatively well controlled in the face of these pressures, it is clear that some discrete areas do not enjoy the good air quality that they should.

We will continue to use long term averaging measuring devices, along with high resolution traffic monitoring, to understand where pressures may be growing, and where action may be needed to control threats to air quality from road traffic. We have expanded our network of monitoring sites for 2019 in line with this aim. Within the Air

Quality Management Area, these devices will be used to inform further the actions that may be required, and to monitor the results stemming from those actions.

Swindon now needs to accelerate and intensify its actions on protecting and improving air quality, and in particular; the effects from road traffic.

The number of petrol or diesel vehicles in use, their continuous growth in numbers, and the continuing use of those vehicles for short journeys which could be easily made on foot or bicycle, combined with the aggressive growth of the town will continue to exert constant upward pressure on local emissions. Improvements in emissions technology have only partially mitigated the relentless intensification of vehicle use to date nationwide, and this alone will not resolve air quality issues in Swindon.

## **Local Engagement and How to get Involved**

The Council has set up a steering group comprised of Senior Managers, reporting to the Chief Executive, to identify measures to tackle the poor air quality at Kingshill, and to produce an Air Quality Action Plan setting out the means by which exceedance of Nitrogen Dioxide objectives can be remedied. The terms of reference for the Steering Group also includes the monitoring and protection of air quality across the Borough, and not just in the Management Area, although this will be its major focus.

The Council encourages the reduction of private vehicle use, reducing the number of motor powered vehicles and sources of airborne emissions (oxides of nitrogen, particulate matter, VOC etc.), contributing to improvements in air quality in the area. Various Council initiatives promote healthy life choices by encouraging local residents to walk, cycle, or use public transport whenever possible.

One of the Council's partnership initiatives (with British Cycling) includes free guided bike rides around various areas of Swindon which introduces easy and comfortable routes connecting different locations, and safe and pleasant journeys around the Borough. Completing shorter journeys by cycle reduces the use of private motor powered vehicles and can positively affect local air quality. Further information may be found here: [www.letsride.co.uk](http://www.letsride.co.uk).

Some other measures and initiatives are listed below, described in section 2.2 and summarised in Table 2.2.

## Swindon Borough Council

- The Council operates the Swindon Travel Choices website, which aims to help individuals plan journeys via walking, cycling or public transport. See this link: <http://www.swindontravelchoices.co.uk/>
- Promoting Low Emission Transport – The Council’s Plan (“Vision for Swindon, How are we going to get there? Plan 2016-2020”) has been published that sets out its vision for Swindon and the priorities it is trying to achieve for residents and the borough of Swindon. It gives details of the pledges made on how it will achieve the vision. Priority 1 of the Vision for Swindon commits the Council to “encourage the increased take-up of low-emission vehicles”.
- The programme to construct solar arrays on Council-owned land. Priority 2 of the Council’s “Vision for Swindon” is to “construct solar arrays on Council-owned land at Common Farm and Chapel Farm. A further scheme at Barnfield is has the generating capacity of 2.5mw

The Council had a Cycle To Work Scheme to encourage its staff to use more sustainable forms of transport . [www.cyclescheme.co.uk](http://www.cyclescheme.co.uk) .



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## 1 Local Air Quality Management

This report provides an overview of air quality in the Borough of Swindon during 2018. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Swindon Borough Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

## 2 Actions to Improve Air Quality

### 2.1 Air Quality Management Areas

#### AQMA at Kingshill Road

Air Quality Management Areas (AQMAs) are declared when there is an exceedance, or likely exceedance, of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months, setting out the measures it intends to put in place in pursuit of compliance with the objectives.

In the light of monitoring data collected before and during 2017, and taking into account previous years' information, Swindon Borough Council declared its first AQMA in 2018. This new AQMA is at a section of the A4289 at Kingshill Road, as described in Table 2.1.

The Air Quality Action Plan (SBC/AQAP01) to tackle the exceedance at Kingshill Road is now live and the Air Quality Steering Group is focussed on driving through those actions identified in the Action Plan. The Air Quality Steering Group identified 18 actions, described in the following section, to pursue to reduce the level of Nitrogen Dioxide within the AQMA to below 40 mcg/m<sup>3</sup>.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)			Action Plan		
						At Declaration	Now		Name	Date of Publication	Link
Kingshill	06.02.18	Nitrogen Dioxide, National Objective = 40 µg/m <sup>3</sup>	Swindon	An area encompassing 14 properties on Kingshill Road west of the junction of Clifton Road	No	56 µg/m <sup>3</sup>	50	µg/m <sup>3</sup>	Air Quality Action Plan, March 2019	2019	<a href="https://www.swindon.gov.uk/airquality">https://www.swindon.gov.uk/airquality</a>

Swindon Borough Council confirm the information on UK-Air regarding their AQMA(s) is up to date

## 2.2 Progress and Impact of Measures to address Air Quality within the Borough of Swindon

Defra's appraisal of last year's ASR found that the conclusions reached in the previous ASR were acceptable for all sources and pollutants.

Swindon Borough Council has taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the Kingshill air Quality Action Plan. Key measures are:

1. Seek to Implement Restrictions (Traffic Regulation Order) on Kingshill Road for certain heavy vehicle classes.
  - a. *Preliminary work is underway to deliver this.*
2. Upgrade the Old Town Railway cycle path and connect it to existing paths.
  - a. *Dependant on external funding, but planning is underway.*
3. Improve emissions from Private Hire and Hackney Carriages through the licensing regime.
  - a. *Policy to bring this in to Licensing Committee July 2019.*
  - b. *Seeks to bring Hackney Carriage lifespan in line with Private Hire vehicles at 10 years.*
4. Investigate options for the installation of 'nudge' signage on approaches to the AQMA; to divert traffic and encourage good driver behaviour.
5. Promote active travel (walking, cycling and public transport) through travel plans and the Swindon Travel Choices campaign.
  - a. *This is an ongoing programme.*
6. Support and collaborate with local bus companies to minimise emissions and maximise usability of the bus network in Swindon, including their vehicle fleet renewal plans.
  - a. *Preparations are underway.*

7. Raise awareness of Air Quality Issues with local residents, schools and businesses to encourage behaviour change.
  - a. *Communications campaign is in the design phase.*
8. Engage and work with employers to promote greener fleets and staff transport arrangements.
  - a. *No progress yet*
9. Review and, if necessary, update Local Development Orders relating to electric vehicle charging requirements and alternative fueled vehicle fueling stations across the borough. Review Parking Standards for new developments to mandate vehicle charging provision.
  - a. *Policy to require EV charging capacity in all new homes now in place.*
10. Pursue the Transport Vision 2026 for Swindon & Wiltshire LEP with regard to sustainable transport outcomes.
  - a. *Ongoing*
11. Review and enhance the Swindon Borough Local Plan (2026) to prioritise sustainable transport and ensure that policies relating to, and impacting upon air quality, are fit for purpose and serve to reduce emissions where possible.
  - a. *Ongoing*
12. Review and enhance the developing Town Centre Movement Strategy with air quality improvements a central theme.
  - a. *Ongoing*

13. Review and enhance the Swindon Local Transport Plan 2011-2026.

*a. Ongoing*

14. Review the Park and Ride Strategy for Swindon to minimise the need for vehicular journeys into the town centre.

*a. Ongoing*

15. Amend purchasing policy for Council owned vehicles to prioritise greener fuels and efficiency where viable.

*a. A new Policy is in place, and significant progress has already been made. 39 electric or ultra low emission vehicles now ordered.*

*b. Considering the changing of all refuse vehicles to use electric bin lifts.*

16. Installation of vehicle charging points at Council depot.

*a. Completed*

17. Change the schedule for recycling and waste collection to out of peak times on Kingshill Road (7am -9am).

*a. Completed*

18. Engage with local bus companies to increase the number and frequency of services to foster.

*a. Ongoing*

Further information related to the AQMA, including maps of the AQMA boundaries, are to be found at Appendix D: Map(s) of Monitoring Locations and AQMAs.

Our Air Quality action Plan is now a live document, and is being vigorously pursued. It is too early to attribute any improvement in air quality to the above actions however, but we expect to be able to begin doing that in our 2020 Annual Status Report.

Principal challenges in delivering the Action Plan will be where we need to secure outside funding in order to deliver; such as for the Bus Boulevard and the Old Town Railway Cycle Path, or where we need to secure the cooperation of other bodies or businesses. The single biggest challenge is likely to be effecting a change in the travelling public's transport and purchasing behaviour; a change that will need to be



achieved if we are to meet our targets, and for which we are dependent on national programmes and policies broadly outside of our control.

Alongside the defined actions in the Action Plan; the Air Quality Steering Group continues to raise the profile of air quality matters in all Development and Highways projects in the Borough. A number of projects and actions to improve air quality more generally have also been achieved.

Swindon Borough Council has completed development of a large battery storage installation at its depot at Waterside. This installation allows the use of power generated at the nearby Shaw solar farm to be directly used in the refuse derived fuel (RDF) plant there.

*Swindon Borough Council, as one of its visions and priorities, has set its Pledge 2 – to enhance Swindon’s reputation as a sustainable energy exemplar, by exploring technology that converts energy from waste, facilitating the move to electrified transport, and delivering opportunities to invest in renewable energy to reduce carbon footprint. As part of this, and as an action in the Action Plan; we have made it mandatory for new homes and certain businesses to include electric vehicle charging capability.*

The Council has set a target to produce 200 Megawatts of renewable energy, equating to 15% of Swindon’s total energy consumption, by 2020.

More detail on progress with the solar schemes can be found on the Public Power Solutions website (<https://www.publicpowersolutions.co.uk/>) which describes the various schemes completed to date.

Electric vehicle charging points are available to encourage cleaner vehicle use. Various points are installed and available in and around Swindon (for locations see: <https://www.zap-map.com/locations/swindon-charging-points/#> ). The Council will also update its Parking Standards in 2019; which will mandate more and better quality charging points in all new developments.

Swindon Borough Council anticipates, at this stage, that the measures stated above and in Table 2.2 will achieve compliance in Kingshill Air Quality Management Area.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Seek to Implement Restrictions (Traffic Regulation Order) on Kingshill Road for certain vehicle classes.	Traffic Management	Strategic Highway improvements	Highways	2019 - 2020	2020 - 2021	12% reduction in road NO <sub>2</sub>	12%	Consultation with Highway Authority. Modelling of impacts of further restrictions. Stakeholder consultation and firm proposal being drafted.	2021	Source apportionment shows that Heavy Vehicles make up less than 1.5% of the road users on this road, yet produce over 12% of the emissions. Removing this category of vehicles can be achieved through a weight restriction on the road  Cost: circa £5k + signage costs.
2	Upgrade the Old Town Railway cycle path and connect it to existing paths.	Transport Planning & Infrastructure	Cycle Network	Highways	2019 – 2021	2021 - 2022	A surfaced and useable route from Wichelstowe to Old Town	<2%	Pursuing funding opportunities	2023	The Old Town Railway cycle path could provide an attractive alternative route into and out of Old Town, especially for Wichelstowe residents, and those in West Swindon.  Cost: to be confirmed
3	Improve emissions from Private Hire and Hackney Carriages through the licensing regime.	Promoting Low Emission Transport	Taxi Licensing Conditions	Licensing	2020	2022	All Private Hire at least Euro 6 by 2024. All Hackney Carriages Euro 6, EV, or alternative fuel by 2024.	5%	Policy prepared for Committee consideration in July	Discussions begun	1000 Licensed Private Hire, and 104 licensed Hackney Carriages in Swindon. Private Hire may be first licensed at no more than 5 years old, and may not be licensed after 10 years of age. Hackney Carriages may be licensed up to 15 years old. There are no current conditions around cleaner propulsion  Cost: Normal Business

## Swindon Borough Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
4	Investigate options for the installation of 'nudge' signage on approaches to the AQMA; to divert traffic and encourage good driver behaviour.	Public Information	Via other mechanisms	Highways Public Health	2019	2021 – 2024	Reduction in road vehicles using Kingshill Road, and reduced emissions.	<5%	NA	2024	Seeking to encourage drivers to use alternative routes where practicable, and to drive appropriately in the AQMA.
5	Promote active travel (walking, cycling and public transport) through travel plans and the Swindon Travel Choices campaign.	Promoting Travel alternatives	Encourage / Facilitate home-working Intensive active travel campaign & infrastructure Personalised Travel Planning Promotion of Active Travel (walking, cycling, public transport) Implementation of School, Residential and Workplace Travel Plans	Highways	2019 - 2024	2019 - 2024	Reduction in road NO <sub>2</sub>	10%	Ongoing. Communications campaign in design phase.	2024	Active modes of transport are part of the Town Centre plan and the Swindon Transport Strategy  Travel Plan Officer actively engages schools, communities and workplaces, particularly for new developments.  Promote Swindon Travel Choices for active journey planning <a href="http://www.swindontravelchoices.co.uk/">http://www.swindontravelchoices.co.uk/</a>  Cost: Normal Business

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
6	Support and collaborate with local bus companies to minimise emissions and maximise usability of the bus network in Swindon, including their vehicle fleet renewal plans.	Alternatives to private vehicle use	Bus based Park & Ride, Other	Bus companies  Planning  Public Health	2019	2019 - 2024	Substantial increase in efficiency and reduction in emissions from buses. Increasing bus use.	<1%	ongoing	2024	Bus companies operating in Swindon are Thamesdown Transport and Stagecoach. Across that fleet; 53% of vehicles are EuroIII or EuroIV, and only 47% EuroV or EuroVI. Swindon's bus routes are radial; in and out from the centre, and there are comparatively few connections between the spokes. Improving routes offers the potential to displace car journeys. Park and Ride schemes have not taken off in Swindon.  Cost: To be determined
7	Raise awareness of Air Quality Issues with local residents, schools and businesses to encourage behaviour change	Public Information	Via leaflets Via other mechanisms Via radio Via television Via the Internet Other	Public Health  Localities  LEP	2019	2019 - 2024	Substantial increase in public transport use and active travel.	10%	Ongoing Communications campaign in design phase.	2024	Influencing behaviour change through health education and promotion  Cost: Normal Business

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
8	Engage and work with employers to promote greener fleets and staff transport arrangements.	Promoting Travel Alternatives  Vehicle Fleet Efficiency	Encourage/Facilitate home-working Workplace Travel Planning  Driver Training & ECO aids Fleet Efficiency and Recognition Schemes	Highways  Public Health	2019	2019 – 2024	Greening of company vehicle fleets Reduction in business miles	<2%	NA	2024	Active modes of transport are part of the Town Centre plan and the Swindon Transport Strategy  Travel Plan Officer actively engages schools, communities and workplaces, particularly for new developments.  Promote Swindon Travel Choices for active journey planning <a href="http://www.swindontravelchoices.co.uk/">http://www.swindontravelchoices.co.uk/</a>
9	Review and, if necessary, update Local Development Orders relating to electric vehicle charging requirements and alternative fueled vehicle fueling stations across the borough. Review Parking Standards for new developments to mandate vehicle charging provision.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Planning	2019	2020	Reviewed LDOs in place.	<2%	Review in progress. Policy now in place to mandate EV charging points in new development	2020	Local development Order is already in place, but to be reviewed to ensure that it provides appropriate planning guidance  Cost: To be determined

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Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
10	Pursue the Transport Vision 2026 for Swindon & Wiltshire LEP with regard to sustainable transport outcomes.	Transport Planning and Infrastructure	Bus route improvements Cycle network Public cycle hire scheme Public transport improvements-interchanges stations and services Other	Planning Highways	2019	2020 - 2024	NA	<5%	Actively pursuing all parts of the Vision.	2024	Wiltshire and Swindon LEP Local Energy Strategy – draft <a href="https://swlep.co.uk/docs/default-source/board-meetings/2018/28-nov-2018/agenda-for-board-meeting-28th-nov-2018.pdf?sfvrsn=15645c74_2">https://swlep.co.uk/docs/default-source/board-meetings/2018/28-nov-2018/agenda-for-board-meeting-28th-nov-2018.pdf?sfvrsn=15645c74_2</a>  Cost: Normal Business
11	Review and enhance the Swindon Borough Local Plan (2026) to prioritise sustainable transport and ensure that policies relating to, and impacting upon air quality, are fit for purpose and serve to reduce emissions where possible.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance Other policy	Planning Highways Public Health	2019 - 2020	2021	Local Plan review adopted	N/A. Target is to avoid significant deterioration as a result of new development	Ongoing. Local Growth Fund schemes delivered.	Target plan adoption Q1 2021	Swindon Borough Local Plan 2026 available at: <a href="https://www.swindon.gov.uk/info/20113/local_plan_and_planning_policy/635/swindon_borough_local_plan_2026">https://www.swindon.gov.uk/info/20113/local_plan_and_planning_policy/635/swindon_borough_local_plan_2026</a>  Cost: Normal Business

## Swindon Borough Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
12	Review and enhance the developing Town Centre Movement Strategy with air quality improvements a central theme.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance Other policy	Planning Localities Public Health Highways	2019	Subject to funding	New Town Centre Movement Strategy targeting air quality improvements as a central theme	5%	Currently being reviewed	TBC	TCM strategy under review Cost: Normal Business
13	Review and enhance the Swindon Local Transport Plan 2011-2026	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance Other policy	Planning Localities Public Health Highways	2019	2019 - 2024	Revised Swindon Local Transport Plan	5%	Currently being reviewed	2020	
14	Review the Park and Ride Strategy for Swindon to minimise the need for vehicular journeys into the town centre.	Alternatives to private vehicle use	Bus based Park & Ride	Highways Planning Localities Highways	2019	2020	New Park and Ride Strategy in place	1%	Under review	2020	Cost: Normal Business

## Swindon Borough Council

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
15	Amend purchasing policy for Council owned vehicles to prioritise greener fuels and efficiency where viable.	Promoting Low Emission Transport	Public Vehicle Procurement – Prioritising uptake of low emission vehicles	Highways Waste Housing	2019 - 2020	2020 - 2023	All Council vehicles to be low emission where viable.	<5%	New purchasing policy in place. 4 replacement EV vans, and 35 ULEV vans ordered, awaiting delivery. Investigating replacement of bin lifts on refuse lorries with electric lifts.	2023	Housing fleet renewed on a 1/3 replacement every year. Policy currently being refreshed to prioritise environmental considerations where viable. Large vehicle fleet for streetworks, waste, etc due for renewal in 2 years. Policy being refreshed to give greater weight to environmental considerations.  Cost: Normal Business
16	Installation of vehicle charging points at Council depot	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Highways Waste Housing	2019	2020 – 2021	Alternative fuel points installed and in use at depot	<2%	Delivered	2021	Prior to procuring alternative fueled public vehicles; charging and fueling infrastructure must be in place.  Cost: Normal Business
17	Change the schedule for recycling and waste collection to out of peak times on Kingshill Road(7am -9am)	Traffic Management	UTC, Congestion management, traffic reduction	Waste management	2019	2019	No peak time collections of Kingshill Road	<1%	Delivered. Collections now take place in middle of day. Congestion much reduced as a result.	2019	Potential to move slots to middle of the day.  Reduce queuing on Kingshill Road and create smoother traffic flow.  Cost: Normal Business



Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
18	Engage with local bus companies to increase the number and frequency of services to foster	Alternatives to private vehicle use	Other	Public Health	2019	2019 - 2020	N/A	<2%	Ongoing	2020	Potential to assist modal shift

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Swindon Borough Council has previously carried out indicative monitoring of PM<sub>2.5</sub> at locations where levels were expected to be highest but has found levels to be low, and is not taking any specific measures to address PM<sub>2.5</sub> at this time.

Public Health England (PHE) publishes data that indicates the fraction of mortality in each area that is attributable to particulate air pollution. For Swindon, the fraction of mortality attributable to particulate air pollution is similar to England.

The main source of particulates in Swindon is from transportation. All of the actions detailed in the Kingshill Air Quality Action Plan, and in particular those Borough Wide projects and actions, will also thus positively impact on Particulates exposure in Swindon.

All major construction & highways projects are compelled to produce Construction Environmental Management Plans through planning conditions, and particulate production is always expected to be controlled using best practice.

Industrial processes are well regulated through an effective Environmental Permitting regime. There are no large quarries.

Little domestic solid fuel burning occurs in Swindon, as it is well supplied by a natural gas network covering all of the Borough. There are no Smoke Control Areas in the Borough.

Swindon Borough Council has an effective Environmental Protection service, and receives few complaints of major bonfires or burnings. All such complaints are investigated promptly.

## **3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance**

### **3.1 Summary of Monitoring Undertaken**

#### **3.1.1 Automatic Monitoring Sites**

This section sets out what monitoring has taken place and how it compares with objectives.

Swindon Borough Council undertook automatic (continuous) monitoring at Bath Road carpark during 2018 using a Chemiluminescence Reference Monitor. Table A.1 in Appendix A shows the details of the site.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

#### **3.1.2 Non-Automatic Monitoring Sites**

Swindon Borough Council undertook non-automatic (passive) monitoring of NO<sub>2</sub> at 29 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. “annualisation” and/or distance correction), are included in Appendix C.

### **3.2 Individual Pollutants**

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

#### **3.2.1 Nitrogen Dioxide (NO<sub>2</sub>)**

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

The reference quality analyser identified no hourly exceedances of the 200µg/m<sup>3</sup> limit on a 99.1% valid sample size.

One diffusion tube in our portfolio indicated Nitrogen Dioxide levels above 60µg/m<sup>3</sup>, on Kingshill Road. This is not a well travelled pavement however as it is very narrow and close to a busy road. Pedestrians spend no longer than 5 minutes in this area in general. This tube represents the very worst exposure within the AQMA, and actions are in place to reduce this exposure markedly as part of our Air Quality Action Plan.

## Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
925100	Bath Road	Roadside	415,289.5	183,789.7	NOx	No	Chemiluminescent	16.0	4.5	2.5

**Notes:**

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.2 – Details of Non-Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S1	Swindon 1 - GWR Museum	Roadside	414629.34	184736.82	Nitrogen Dioxide	No	2.3	2.0	No	2.5
S2	Swindon 2 Bath Rd Car Park		415289.6	183789.81		No	18.4	5.3		2.6
S3	Swindon 4 - S4, 8 Okus Road		414758.67	183718.55		No	7.1	2.3		2.5
S4	Swindon 5 - 186 Kingshill Rd		414257.86	183972.1		No	4.3	2.0		2.6
S5	Swindon 6 - Chalet School, Queens Drive		416088.78	184906.88		No	0	7.5		2.8
S6	Swindon 8 - 102 Bath Road		414925.19	183741.49		No	7.1	3.0		2.7
S7	Swindon 9 - 31 Sandgate		417714.18	186315.55		No	3.4	12.6		1.3
S8	Swindon 11 - Devizes Rd, Bridal shop		415531.43	183666.32		No	0.3	4.8		2.8
S9	Swindon 12 - Manchester Rd		415156.96	185100.84		No	0.5	2.6		2.8
S10	Swindon 13 - Meadow Way Badbury		419347.33	180974.53		No	4.3	48.0		1.8
S11	Swindon 14 - Kingshill Rd/Clifton St		414733.29	183782.89		Nitrogen Dioxide	Yes	31.1 (12.4 across the road)		1.3
S12	Swindon 15 - Westcott Place		414075.8	184040.99	Nitrogen Dioxide	No	8.2	1.2	2.8	

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S13	Swindon 16 - Cricklade Rd (Moonraker)		415677.18	187335.48	Nitrogen Dioxide	No	2.2	3.5		2.9
S14	Swindon 17 - Bruce St Bridges (to 09.05.2017)		413797.07	185505.47	Nitrogen Dioxide	No	0	5.3 (to Bruce St and 21.2 to the roundabout)		2.9
S14	Swindon 17 – Iffley Road (from 09.05.2017)		413893.07	185621.33		No	8.0	8.0		2.0
S15	Swindon 18 - 102 Kingshill Road		414698.37	183800.27		Yes	0	1.3		2.5
S16	Swindon 19 - 86 Clifton Road		414755.79	183788.58		No	11.0	8.3 (Kingshill and 1.3 to Clifton)		2.6
S17	Swindon 20 - A420 South Marston		419437.78	186764.67		No	27.5	12.5		2.7
S18	Swindon 21 - 63 Kingshill Rd		414552.28	183884.71		No	6.0	2.0		2.8
S19	Swindon 22 - 38 Farriers Close		Railway side	416145.9		185666.9	Nitrogen Dioxide	No		7.0
S20	Swindon 23 - 37 Devizes Rd	Roadside	415547	183552.03	Nitrogen Dioxide	No	6.3	1.8	2.4	
S21	Swindon 23 - 37 Devizes Rd		415547	183552.03	Nitrogen Dioxide	No	6.3	1.8	2.4	
S22	Swindon 23 - 37 Devizes Rd		415547	183552.03	Nitrogen Dioxide	No	6.3	1.8	2.4	
S23	Swindon 24, 30 Devizes Road		415554.74	183494.78		No	3.4	2	2.4	

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
S24	Swindon 25 - 68 Cheney Manor Rd (Rodbourne Rd)		413886	185672		No	2.6	2.4		3.2
S25	Swindon 26 - Tadpole Lane		411973.26	189625.23		No	15.7	0.7		2.3
S26	Swindon 27 - 66 Ermin St		417398.65	187353.88		No	0.7	1.9		2.5
S27 & S28	Bath Road - as S2 above					No				
S29	Swindon 18 - Opp 101 Kingshill Road		414,707	183,806		Yes	10	2.2		2.5

**Notes:**

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on/adjacent to the façade of a residential property).

(2) N/A if not applicable.



Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2014	2015	2016	2017	2018
GWR Museum	Roadside	DT	100	100	37.2	35.2	37.5	37.1	34.0
Bath Rd Car Park	Roadside	DT	100	100	25.4	25.5	23.9	21.8	21.0
8 Okus Road	Roadside	DT	100	100	26.7	19.6	24.3	19.9	19.4
186 Kingshill Rd	Roadside	DT	100	100	31.1	28.4	30.6	33.6	30.0
Chalet School, Queens Dr	Roadside	DT	100	100	32.9	32.1	31.8	34.3	28.0
102 Bath Road	Roadside	DT	100	100	26.9	35.2	33.9	36.9	34.3
31 Sandgate	Roadside	DT	100	100	21.7	18.0	24.7	21.0	19.3
Devizes Rd, Bridal shop	Roadside	DT	100	100	25.7	24.8	32.7	24.5	22.2
Manchester Rd	Roadside	DT	100	100	39.3	37.4	<b>43.4</b>	39.1	38.9
Meadow Way Badbury	Roadside	DT	100	100	31.1	30.4	30.1	28.4	24.6
Kingshill Rd/Clifton St	Roadside	DT	100	100	<b>47.4</b>	<b>41.3</b>	38.6	<b>40.6</b>	38.4
Westcott Place	Roadside	DT	100	100	32.3	30.2	33.6	31.2	29.8
Cricklade Rd (Moonraker)	Roadside	DT	83.3	83.3	36.2	35.8	38.7	35.2	35.3
Bruce St Bridges	Roadside	DT	Decommissioned	Decommissioned	28.2	25.4	26.6	27.6	NA
Iffley Road	Roadside	DT	100	100	n/a	n/a	n/a	<b>40.16</b>	31.7
102 Kingshill Road	Roadside	DT	100	100	n/a	<b>56.9</b>	<b>51.2</b>	<b>56.2</b>	<b>49.1</b>
Swindon 19 - 86 Clifton Road	Roadside	DT	100	100	n/a	28.0	30.5	29.0	26.2
Swindon 20 - A420 South Marston	Roadside	DT	100	100	27.3	23.8	26.3	23.4	20.7
Swindon 21 - 63 Kingshill Rd	Roadside	DT	100	100	34.8	30.1	33.2	31.7	30.4
Swindon 22 - 38 Farriers Close	Rail-side	DT	100	100	24.37	22.4	20.6	21.0	19.7
Swindon 23 - 37 Devizes Rd	Roadside	DT	100	100	<b>45.6</b>	<b>44.4</b>	<b>42.3</b>	<b>45.6</b>	<b>40.7</b>
Swindon 23 - 37 Devizes Rd	Roadside	DT	100	100	<b>47.56</b>	<b>46.7</b>	<b>42.5</b>	<b>46.9</b>	<b>40.4</b>
Swindon 23 - 37 Devizes Rd	Roadside	DT	100	100	<b>44.9</b>	<b>45.6</b>	<b>41.2</b>	<b>45.0</b>	<b>40.5</b>
Swindon 24, 30 Devizes Road	Roadside	DT	100	100	28.4	<b>43.4</b>	<b>43.2</b>	<b>42.8</b>	37.2
Swindon 25 - 68 Cheney Manor Rd (Rodbourne Rd)	Roadside	DT	100	100	42.4	36.5	<b>41.6</b>	39.9	38.1

Tadpole Lane	Roadside	DT	100	100	17.7	15.3	15.5	16.5	16.2
66 Ermin St	Roadside	DT	100	100	31.2	29.4	28.7	28.3	27.8
S27 Bath Rd Car Park no 2	Roadside	DT	100	100	n/a	n/a	n/a	21.9	22.0
S28 Bath Rd Car Park no 3	Roadside	DT	100	100	n/a	n/a	n/a	22.7	22.4
S29 Opp 101 Kingshill Rd	Roadside	DT	100	100	n/a	<b>63.8</b>	<b>51.5</b>	<b>64.1</b>	<b>66.3</b>

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75%

#### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations

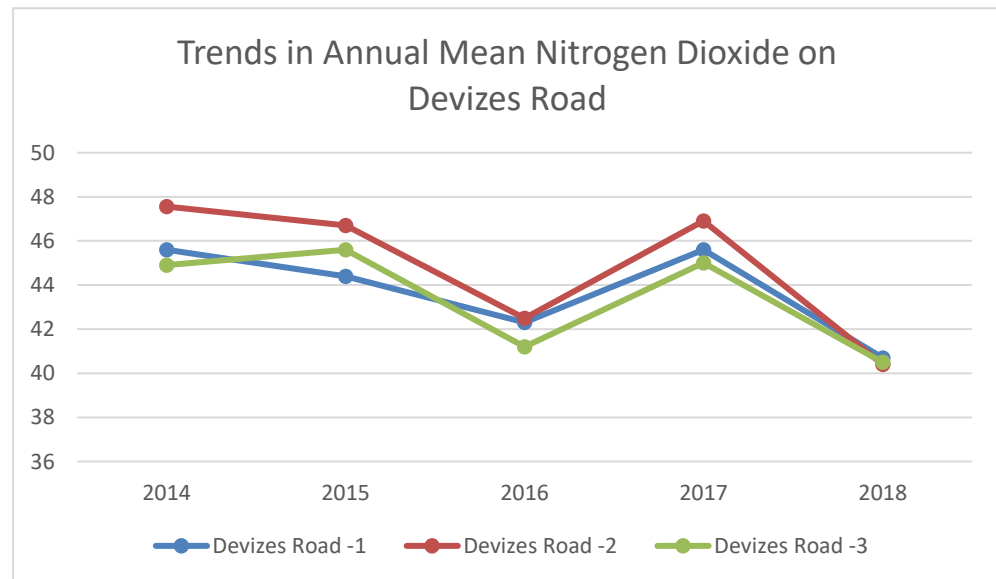
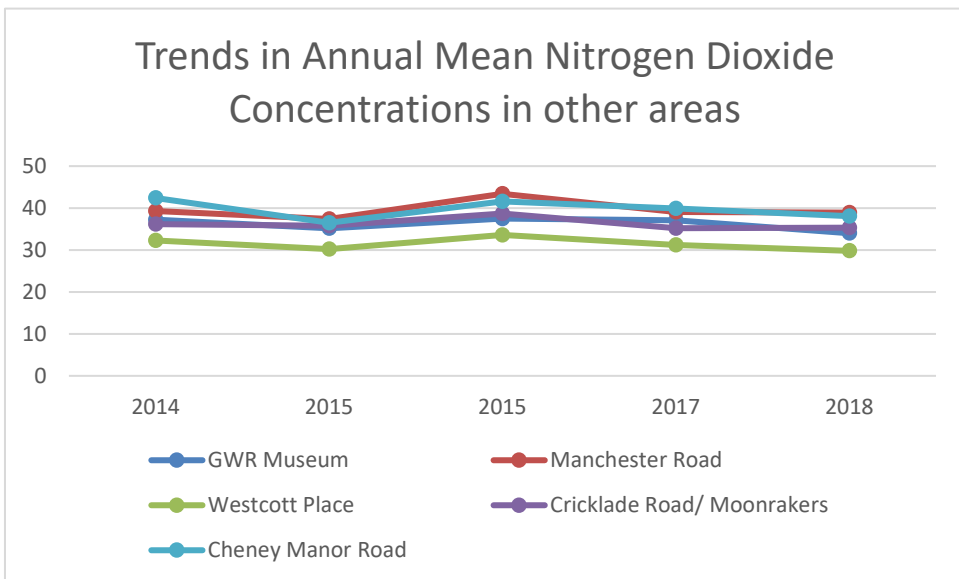
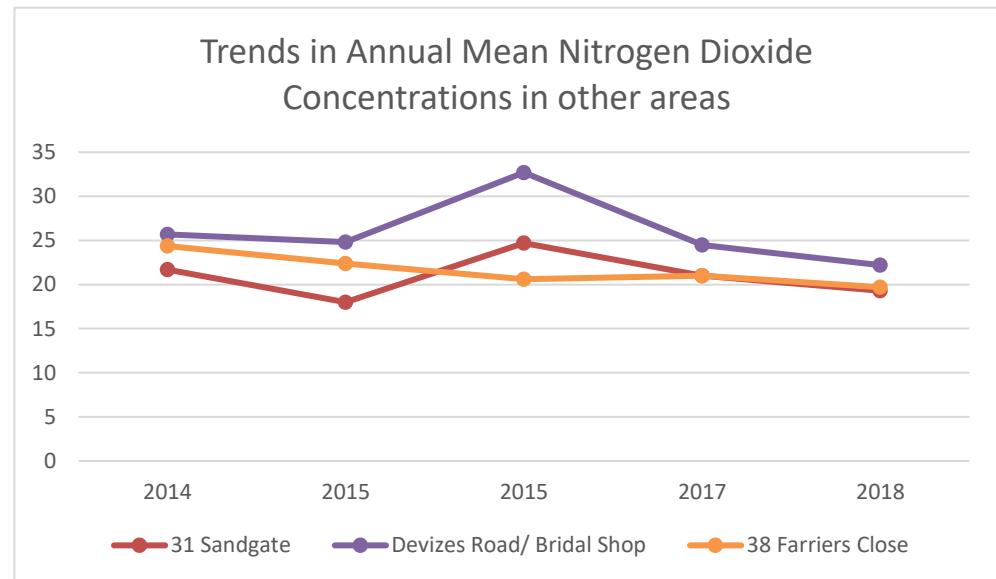
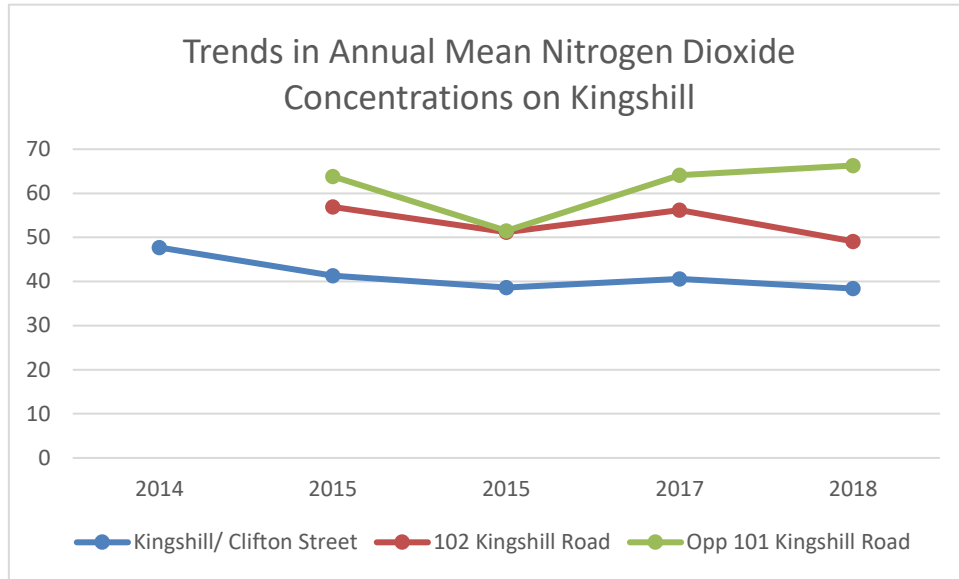


Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2018 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2014	2015	2016	2017	2018
CM1	Select	Automatic	99.1	99.1	<b>19</b>	11	12	15	<b>0</b>

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

(3) If the period of valid data is less than 85%, the 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

## Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results - 2018

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (factor-0.77) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
Swindon 1 - GWR Museum	45.3	50.1	48.5	45.7	47	36.5	43.1	37.4	42.9	45.9	43	55	<b>44.1</b>	<b>34.0</b>	<b>33.4</b>
Swindon 2 Bath Rd Car Park	33.5	30.9	31.3	24	23.4	21	23.7	22.6	25.9	31.2	32.6	40.3	<b>27.3</b>	<b>21.0</b>	<b>20.1</b>
Swindon 4 - S4, 8 Okus Road	30.6	30.8	29.9	22.2	23.6	20.6	20.9	21.3	21.6	28.1	28	31.9	<b>25.2</b>	<b>19.4</b>	<b>18.1</b>
Swindon 5 - 186 Kingshill Rd	37.3	42.4	47	44.1	35	27	38.4	30	36.4	42.9	47.8	57.1	<b>38.9</b>	<b>30.0</b>	<b>27.2</b>
Swindon 6 - Chalet School, Queens Drive	49.2	36.5	40.1	31.3	28.5	22.8	42.2	37.3	41	32.3	39	51.4	<b>36.4</b>	<b>28.0</b>	<b>28.0</b>
Swindon 8 - 102 Bath Road	55.7	41.7	54.8	41.5	40.3	37.1	42.9	36.5	42.1	48.5	48.8	66.4	<b>44.5</b>	<b>34.3</b>	<b>28.8</b>
Swindon 9 - 31 Sandgate	32.8	25.3	26.4	23.2	22	19.1	24.1	20.6	24.4	28.4	29.1	33	<b>25.0</b>	<b>19.3</b>	<b>19.2</b>
Swindon 11 - Devizes Rd, Bridal shop	32.7	33.9	30.5	31.6	27.6	22.6	25.8	20.6	21.3	33	37.3	37.5	<b>28.8</b>	<b>22.2</b>	<b>22.1</b>
Swindon 12 - Manchester Rd	56.1	56.2	49.8	46.3	54.2	56.4	51.1	40.7	46.3	53.7	45	59.8	<b>50.5</b>	<b>38.9</b>	<b>38.5</b>
Swindon 13 - Meadow Way Badbury	34.7	34.7	36.8	33.2	24	20.8	32.9	29.4	36.8	30.8	37.2	39.4	<b>31.9</b>	<b>24.6</b>	<b>23.5</b>
Swindon 14 - Kingshill Rd/Clifton St	49.1	38.1	52.9	51.9	51.8	41.1	57.3	47.4	52.9	47.5	58.8	52	<b>49.9</b>	<b>38.4</b>	<b>32.1</b>
Swindon 15 - Westcott Place	35.3	42.9	43.4	37.9	39.6	34.7	37.1	30	38.3	45.1	42.1	53.7	<b>38.8</b>	<b>29.8</b>	<b>23.7</b>
Swindon 16 - Cricklade Rd (Moonraker)	46		47.7	48.1	53.4	50.2	44.1	37.5		46.3	39.1	54.2	<b>45.8</b>	<b>35.3</b>	<b>32.6</b>

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Swindon 17 - Iffley Rd from	55.4	42	42.2	32.6	33.1	27	43.4	39.7	46.2	48.2	43.3	63.6	<b>41.2</b>	<b>31.7</b>	<b>31.3</b>
Swindon 18 - 102 Kingshill Road	60.6	60.4	64.8	68	62	52	71.8	60.6	63.2	67.3	70.4	78.2	<b>63.7</b>	<b>49.1</b>	<b>48.8</b>
Swindon 19 - 86 Clifton Road	41.2	35.2	39.4	31.8	31.7	26.9	31.5	29.6	35.9	36.4	35	38.7	<b>34.1</b>	<b>26.2</b>	<b>23.1</b>
Swindon 20 - A420 South Marston	36.6	32.2	29	19.5	28.9	25.1	25	20.9	24.3	30.2	23.8	34.2	<b>26.9</b>	<b>20.7</b>	<b>19.6</b>
Swindon 21 - 63 Kingshill Rd	41.4	50.1	43.2	40.4	48	39.8	36.2	27.4	36.2	47.3	24.1	51.1	<b>39.5</b>	<b>30.4</b>	<b>25.3</b>
Swindon 22 - 38 Farriers Close	36	32	26.3	21.1	24	18.2	20.7	19	26.1	29.2	29.2	39.1	<b>25.6</b>	<b>19.7</b>	<b>19.6</b>
Swindon 23 - 37 Devizes Rd	60.2	52.7	54.4	48.3	47.4	37.2	63.1	54.1	58.2	55.8	49.5	71.2	<b>52.8</b>	<b>40.7</b>	<b>33.7</b>
Swindon 23 - 37 Devizes Rd	62.4	58.1	54.9	55.5	44.5	36	57.2	52.4	53.4	56.1	46.3	67.9	<b>52.4</b>	<b>40.4</b>	<b>33.5</b>
Swindon 23 - 37 Devizes Rd	56.7	55.4	52.6	54.5	42.4	39.9	62.9	48.5	58.4	54.1	52.9	73.9	<b>52.6</b>	<b>40.5</b>	<b>33.6</b>
Swindon 24, 30 Devizes Road	48	52.1	49.2	44.1	47.2	41.9	54.9	44.2	53	55.8	41.6	74.7	<b>48.4</b>	<b>37.2</b>	<b>32.3</b>
Swindon 25 - 68 Cheney Manor Rd (Rodbourne Rd)	47	57.4	48.5	56.2	56.6	47.9	47.4	36.5	41.1	51	54.9	54	<b>49.5</b>	<b>38.1</b>	<b>34.3</b>
Swindon 26 - Tadpole Lane	25.2	26.6	24.6	18.4	18	13.7	15.8	15.1	21.3	25.3	28.1	30.3	<b>21.1</b>	<b>16.2</b>	<b>12.3</b>
Swindon 27 - 66 Ermin St	44.2	46.1	31.8	36	34.6	30.3	33.3	27	34.2	34	45.1	45.1	<b>36.1</b>	<b>27.8</b>	<b>27.2</b>
Bath Rd Car Park	30.9	29.9	35.1	25.3	24.2	18.8	24	20.6	25.3	32.7	32.5	43.1	<b>28.5</b>	<b>22.0</b>	<b>21.2</b>
Bath Rd Car Park	38.2	30.2	29.9	25.8	23.1	20.3	22.6	20.9	25.7	34.2	33.8	37.9	<b>29.0</b>	<b>22.4</b>	<b>21.5</b>
Opp 101 Kingshill Road	64.3	95.8	95.7	92.5	103.3	95.1	97	74.9	77.7	72.6	73	91.6	<b>86.1</b>	<b>66.3</b>	<b>46.3</b>

- Local bias adjustment factor used (confirm by selecting in box)
- National bias adjustment factor used (confirm by selecting in box)
- Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
- Where applicable, data has been distance corrected for relevant exposure (confirm by selecting in box)

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

## Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

### Diffusion Tube Bias Adjustment Factors

The nitrogen dioxide diffusion tube data has been adjusted using factors generated by the National Bias Adjustment Factor Database (Version Number 03/18) which is available on the LAQM Helpdesk Website (<https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html>).

Swindon Borough Council's nitrogen dioxide diffusion tubes were supplied and analysed by ESG Group, Didcot and use 50% TEA in acetone.

### The bias adjustment factor used 0.77

#### Discussion of Choice of Factor to Use

No co-location study was performed by Swindon Borough Council, therefore National bias adjustment factors based on 27 studies for ESG Didcot for 2018 were used.

### Laboratory

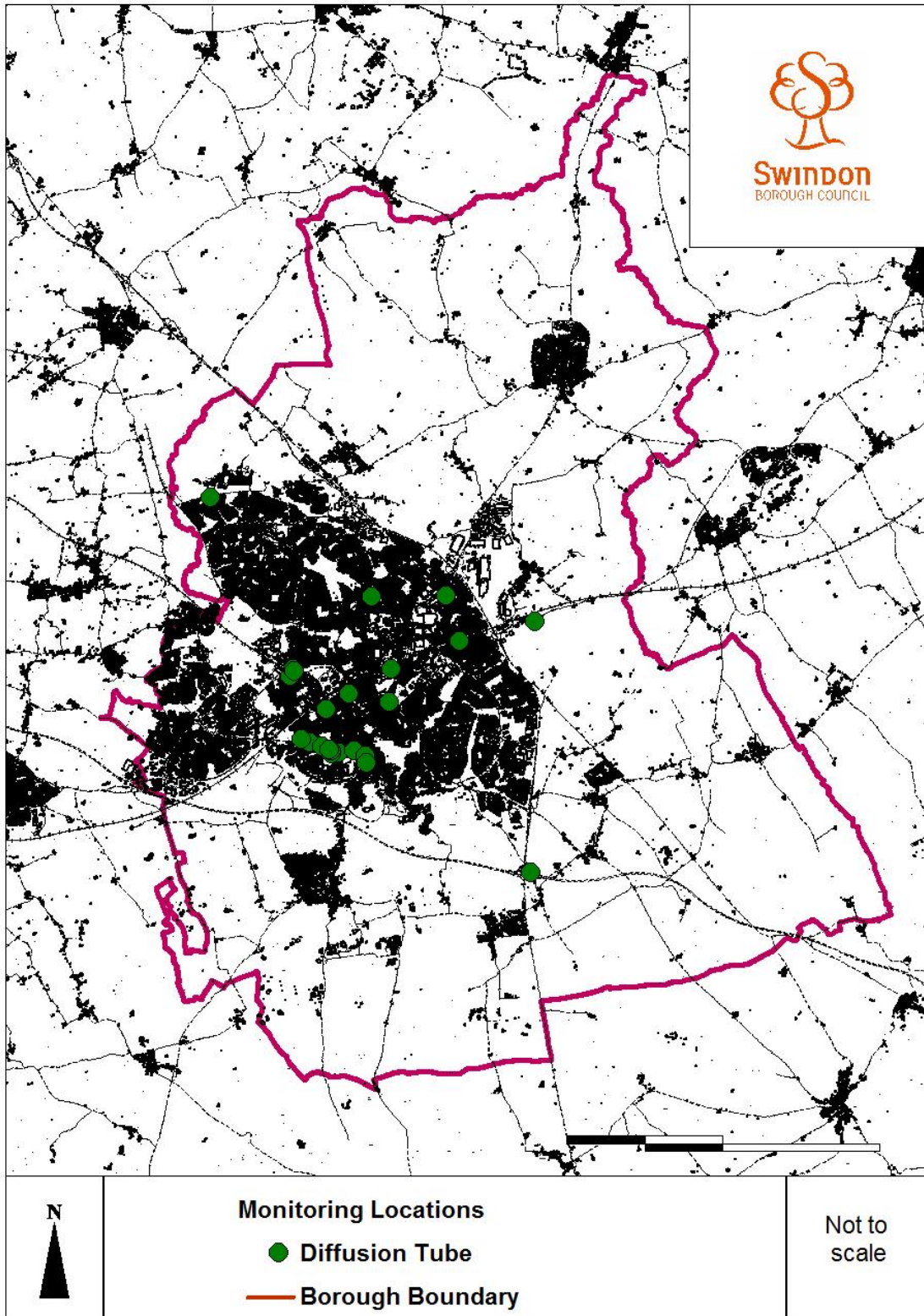
Swindon Borough Council has employed Environmental Scientifics Group (SOCOTEC Ltd) to supply and carry out the analysis of its diffusion tubes. SOCOTEC has advised the following.

- The manufacture and analysis of NO<sub>2</sub> diffusion tubes is covered by its UKAS accreditation.
- The method meets the requirements laid out in DEFRA's "Diffusion Tubes for Ambient NO<sub>2</sub> Monitoring: Practical Guidance."
- The laboratory has taken part in the WASP proficiency scheme since its inception (the WASP proficiency scheme has now been replaced with the IR PT scheme - new international PT scheme for laboratories involved in air quality analysis).
- In the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, 100% of the SOCOTEC results for 2018 scored the highest possible result of **satisfactory**.



## Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure 3 Location of Diffusion Tubes in the Borough of Swindon



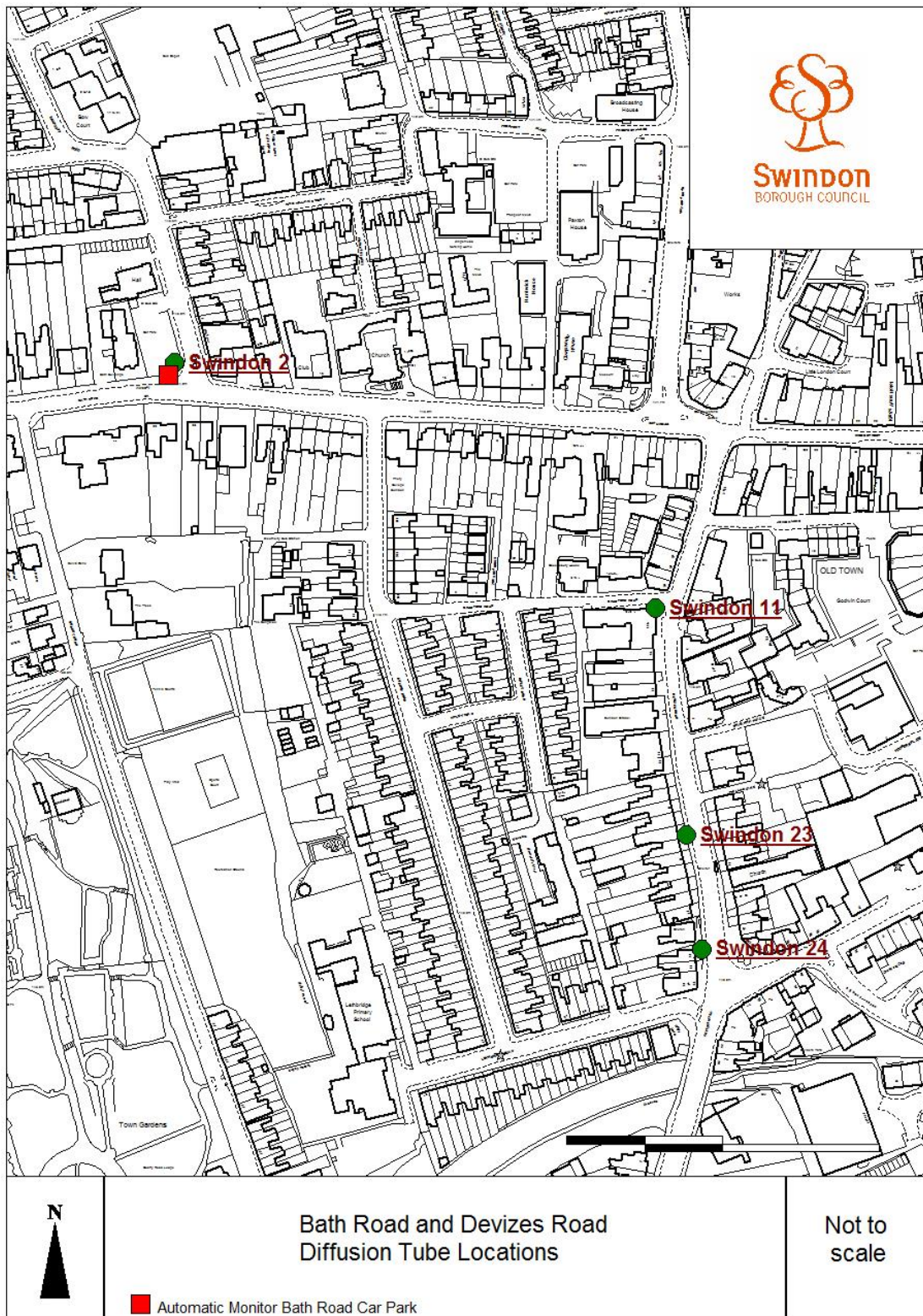
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Figure 4 Kingshill Diffusion Tube Locations





Figure 5 Bath Road and Devizes Road Diffusion Tube Locations



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Figure 6 Location of Chemiluminescent (Real time) Monitor

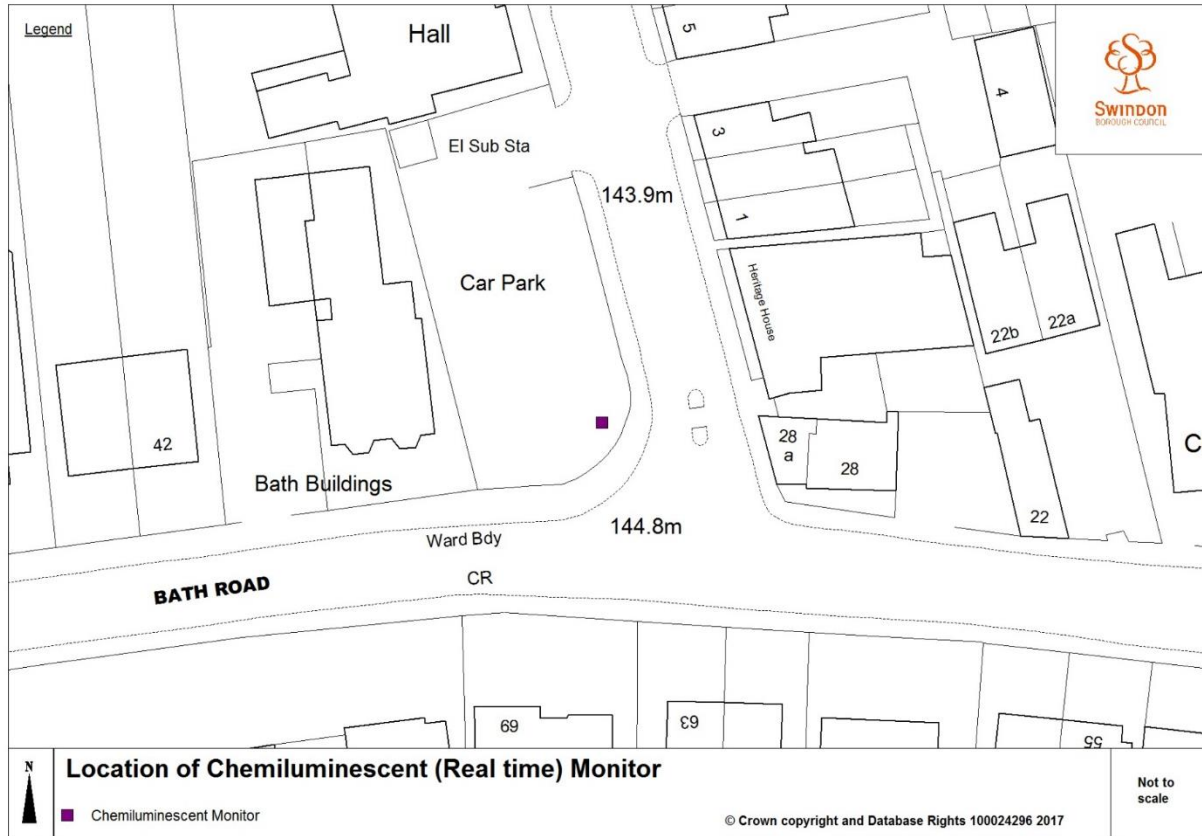
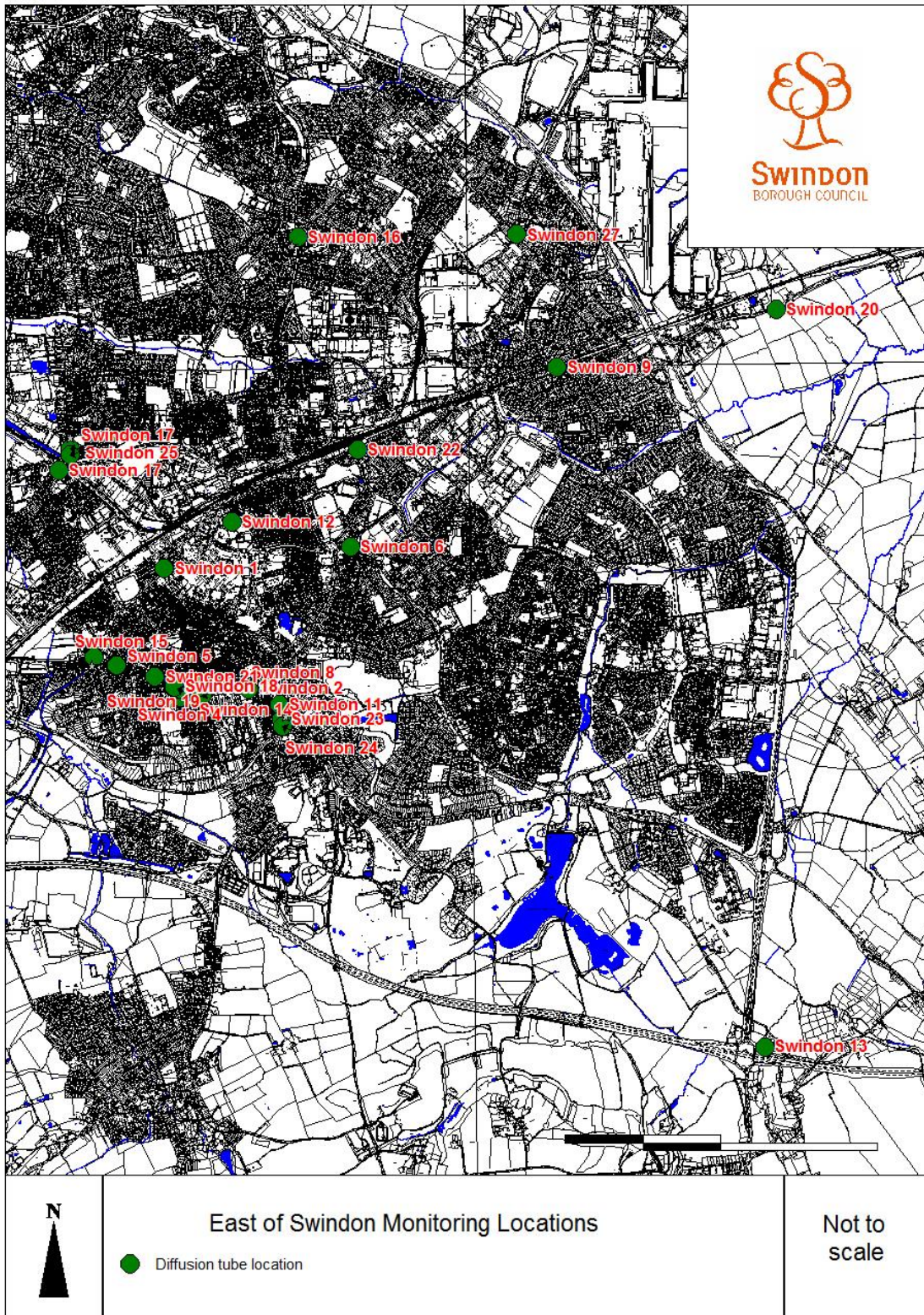




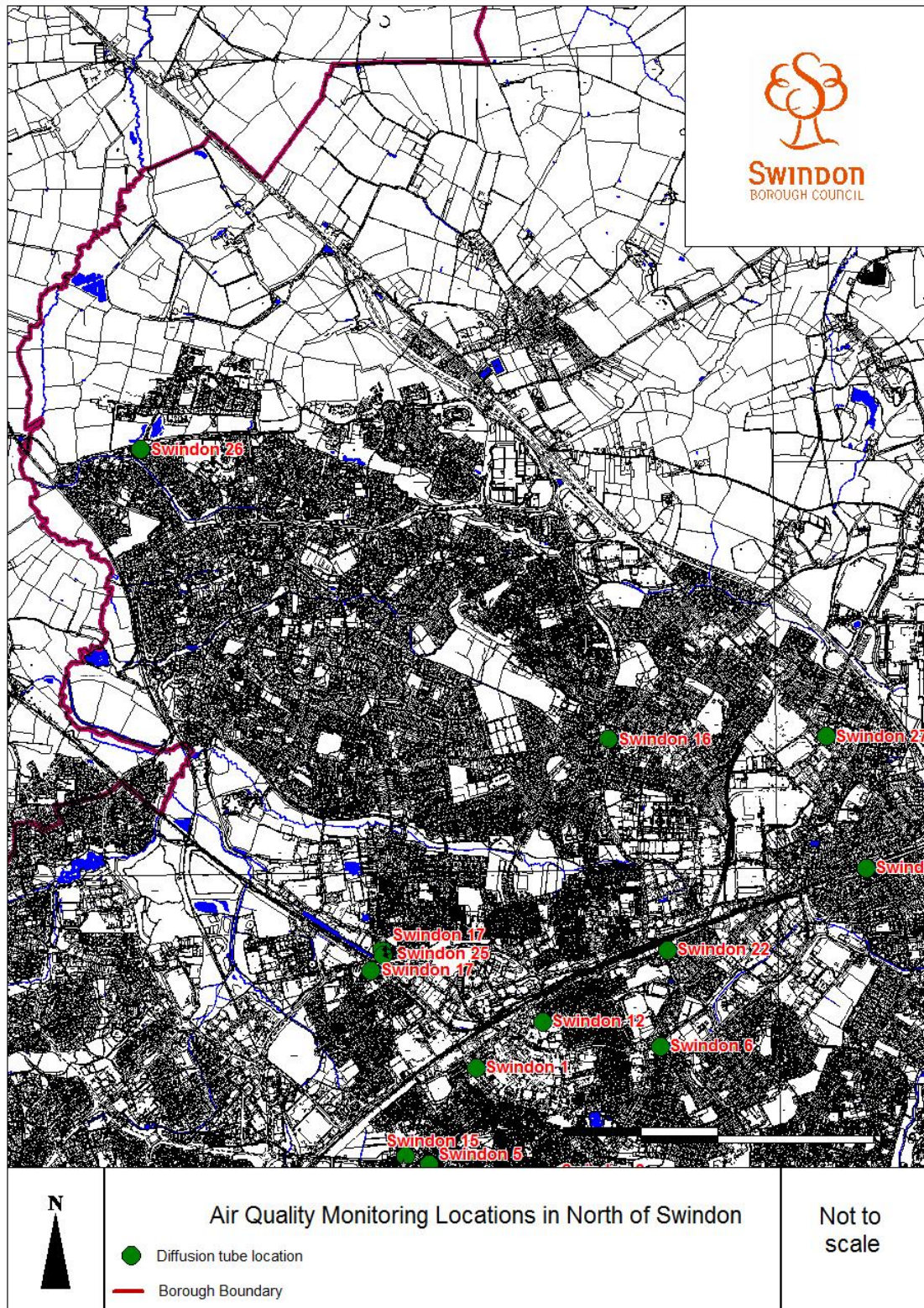
Figure 7 Location of Diffusion Tubes in the eastern and southern part of Swindon



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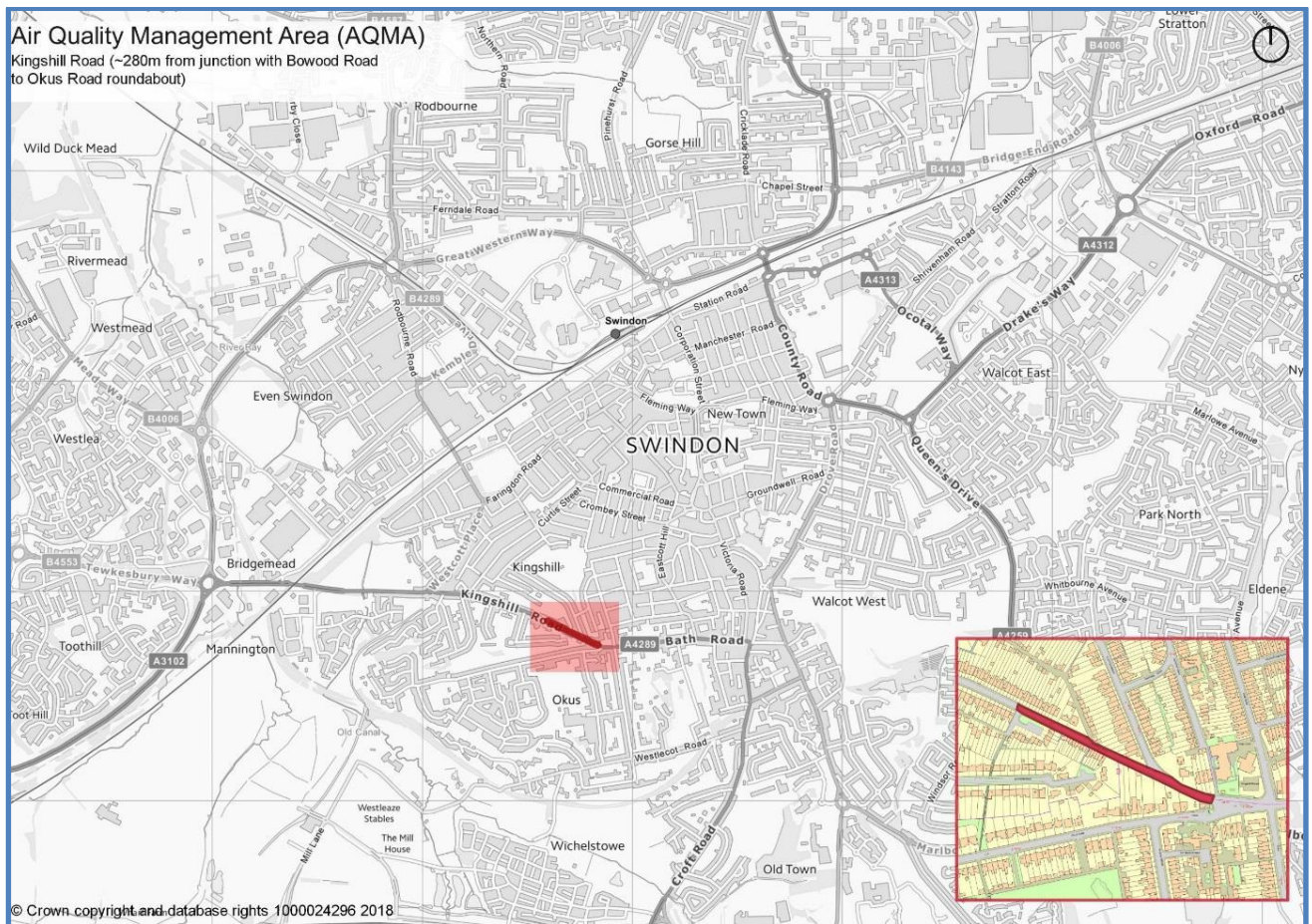
Figure 8 Location of Diffusion Tubes in Northern part of Swindon



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Figure 9 Kingshill AQMA area



## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>4</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>4</sup> The units are in micrograms of pollutant per cubic metre of air (µg/m<sup>3</sup>).



## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

1. Transport Vision 2026 for Swindon and Wiltshire Local Enterprise Partnership,  
March 2014